CLAIMS

What is claimed is:

1. A process for configuring a symmetric xDSL-type modem, comprising:

detecting a predetermined criterion corresponding to an asymmetric operating mode, in particular an ADSL-type; such criterium including the estimation of lenght of a line; and

in response to said detection, disabling a number of carriers in order to establish the asymmetric operating mode.

2. A configuration process according to claim 1 wherein it is applied to a VDSL-type modem operating with up to 4096 carriers and being reconfigurable in ADSL mode with a number of carriers reduced to 256.

3. A configuration process according to claim 1 wherein said criterion further includes a detection of signals defined in recommendation G.994.1 or the measurement of the signal to noise ratio per carrier.

4. A configuration process according to claim 1 wherein said predetermined criterion is the estimation of the line lengthderived from a timing advance measurement.

5. A configuration process according to claim 1, further comprising deactivating a cyclic suffix in a transmit path and digital power spectral density shaping filtering for conformity to an ADSL-type mask, associated with a digital echo suppression filter and a temporal equalizer in a receive path.

6. A configuration process according to claim 2 wherein in ADSL mode, the configuration process comprises:

in a transmit path:

activating a digital power spectral density shaping filter (PSF) for conformity with an ADSL-type mask;

deactivating a process for inserting a cyclic suffix after each symbol to be transmitted;

activating a $H^{-1}(f)$ pre-compensation before an inverse Fourier transform allowing to compensate for a phase and amplitude distortion introduced by said digital PSF; and

in a receive path, activating a digital echo suppression filter and temporal equalizer.

7. An xDSL-type modem allowing symmetric operation in DMT mode based on a number of carriers, comprising:

means for detecting a predetermined criterion for operation in an asymmetric mode, in particular an ADSL-type mode, such criterion including an estimation of length of a line;

means for controlling disablement of a number of carriers in order to establish the asymmetric operating mode.

8. A modem according to claim 7, further comprising means for communicating in VDSL mode and means for self-configuring in ADSL mode in response to detection of said predetermined criterion.

9. A modem according to claim 7 wherein said criterion is a detection of signals defined in recommendation G.994.1 or the measurement of signal to noise ratio per carrier.

10. A modem according to claim 7 wherein said predetermined criterion is an estimation of a line length derived from a timing advance measurement.

11. A modem according to claim 7 wherein in ADSL mode, the modem comprises:

in a transmit path:

a digital power spectral density shaping filter (PSF) that can be disabled, for conformity to an ADSL-type mask;

means for pre-compensating phase and amplitude distortion introduced by said digital PSF filter;

means for deactivating insertion of a cyclic suffix after each symbol to be transmitted;

in a receive path:

a digital echo suppression filter (ESF) combined with a digital time-domain equalizer.

12. A modem according to claim 11 wherein said power spectral density shaping filter (PSF) and echo suppression filter (ESF) are infinite impulse response low-pass filters.

13. A modem according to claim 11 wherein said PSF and ESF filters are identical.

14. A modem according to claim 11, further comprising in the transmit path, a complex gain element before modulation, in order to pre-compensate for distortion introduced by said PSF and ESF filters.

15. A modem according to claim 7 wherein switching from ADSL mode to VDSL mode is accomplished in response to user control.

16. A method, comprising:

configuring a modem for interoperability between first and second xDSL operating modes;

detecting a criterion associated with the first operating mode, such criterion including an estimation of the lenght of the line; and

in response to the detected criterion, disabling a number of carriers associated with the second operating mode to establish the first operating mode.

17. The method of claim 1 wherein detecting the criterion includes estimating a measure of line length derived from a timing advance measurement.

18. The method of claim 1 wherein detecting the criterion includes detecting signals associated with the first operating mode.

19. The method of claim 1 wherein disabling the number of carriers associated with the second operating mode to establish the first operating mode includes disabling a number of carriers associated with a VDSL-type operating mode to establish an ADSL-type operating mode.

20. The method of claim 1, further comprising:

deactivating a cyclic suffix for a transmit path; and

digital signal processing based on a power spectral density shaping filter for the transmit path and based on a digital echo suppression filter and a temporal equalizer for a receive path.

21. An apparatus, comprising:

a modem to interoperate between first and second xDSL modes;

a first component of the modem to detect a criterion associated with the first mode, such criterion including the estimation of the length of the line; and

a second component of the modem to disable a number of carriers associated with the second mode to establish the first mode, in response to the criterion detected by the first component.

22. The apparatus of claim 21 wherein the first component to detect the criterion can determine a measure of line length derived from a timing advance measurement.

23. The apparatus of claim 21 wherein the first component to detect the criterion can detect at least one signal associated with the first operating mode.

24. The apparatus of claim 21 wherein the first mode comprises an ADSL-type operating mode, and wherein the second mode comprises a VDSL-type operating mode.

25. The apparatus of claim 21, further comprising:

a digital power spectral density shaping filter;

a pre-compensation unit coupled to the digital power spectral density shaping filter to pre-compensate phase and amplitude distortion introduced by the digital power spectral density shaping filter;

a deactivation unit to deactivate insertion of a cyclic suffix after each symbol to be transmitted; and

a digital echo suppression filter coupled to a digital time-domain equalizer.

26. The apparatus of claim 25 wherein the digital power spectral density shaping filter and echo suppression filter comprise infinite impulse response filters.

27. The apparatus of claim 25, further comprising a complex gain element before modulation to pre-compensate for distortion introduced by the digital power spectral density shaping filter and the digital echo suppression filter.

28. The apparatus of claim 21, further comprising:

a means for signal processing along a transmit path of the modem;

a means for signal processing along a receive path of the modem; and

a means for controlling switching operation between the first and second modes.